

WHAT IS CLAIMED IS:

1. An OFDM transmit signal receiver comprising:
a demodulation circuit configured to receive
an OFDM transmit signal containing an information
5 carrier, an additive-information transmission carrier,
and a reception-synchronization pilot signal to convert
said information carrier, said additive-information
transmission carrier, and said reception-
synchronization pilot signal into frequency-axial data,
10 said information carrier transmitting information data,
said additive-information transmission carrier having
a lower multi-valued modulation degree than said
information carrier, and said reception-synchronization
pilot signal having a lower multi-valued modulation
15 degree than said information carrier;
a differential detection circuit configured to
conduct detection using a detection-subject symbol of
a plurality of symbols indicated at a predetermined
interval in the same frequency range and using a symbol
20 ahead said detection-subject symbol by a predetermined
time in at least either one output of said additive
information transmission carrier and said reception-
synchronization pilot signal output from said
demodulation circuit; and
25 a first S/N ratio generation circuit configured to
generate an S/N ratio based on a detection output
provided from said differential detection circuit, said

S/N ratio indicating a reception quality of said OFDM transmit signal.

2. The OFDM transmit signal receiver according to claim 1, wherein said demodulation circuit comprises a quadrature detection circuit configured to detect said OFDM transmit signal in an orthogonal manner and a fast fourier transfer circuit conducting fast fourier transform operations to convert time-axial data of a signal output from said quadrature detection circuit into frequency-axial data.

3. The OFDM transmit signal receiver according to claim 1, further comprising:

an equalization circuit configured to demodulate and to equalize said information carrier output from said demodulation circuit;

a second S/N ratio generation circuit configured to generate an S/N ratio based on an equalization output provided from said equalization circuit, said S/N ratio indicating a reception quality of said OFDM transmit signal; and

a selection circuit configured to select either one of said S/N ratio output from said first S/N ratio generation circuit and said S/N ratio output from said second S/N ratio generation circuit based on said S/N ratio output from said second S/N ratio generation circuit.

4. The OFDM transmit signal receiver according to

claim 1, further comprising:

an equalization circuit configured to demodulate and to equalize said information carrier output from said demodulation circuit;

5 a second S/N ratio generation circuit configured to generate an S/N ratio based on an equalization output provided from said equalization circuit, said S/N ratio indicating a reception quality of said OFDM transmit signal; and

10 a synthesis circuit configured to synthesize said S/N ratio output from said first S/N ratio generation circuit and said S/N ratio output from said second S/N ratio generation circuit in accordance with said S/N ratio output from said second S/N ratio generation
15 circuit.

5. The OFDM transmit signal receiver according to claim 1, further comprising:

an equalization circuit configured to demodulate and to equalize said information carrier output from
20 said demodulation circuit;

a carrier interference detection circuit configured to detect carrier interference/non-interference in said information carrier based on an equalization output provided from said equalization
25 circuit; and

a correction circuit configured to conduct correction to reflect a carrier deterioration due to

said carrier interference on said S/N ratio output from said first S/N ratio generation circuit in accordance with an output provided from said carrier interference detection circuit.

5 6. The OFDM transmit signal receiver according to claim 2, further comprising:

an equalization circuit configured to demodulate and to equalize said information carrier and guessing time-axial and frequency-axial transmission-path
10 responses based on a signal output from said demodulation circuit;

a transmission-path response-fluctuation detection circuit configured to detect frequency-directional and time-directional fluctuations of said transmission-path
15 response by using said transmission-path response guessed at said equalization circuit; and

a correction circuit configured to conduct correction processing, in accordance with such a fluctuation in transmission-path response that is
20 detected by said transmission-path response-fluctuation detection circuit, to reflect a deterioration due to said fluctuation on said S/N ratio output from said first S/N ratio generation circuit.

25 7. The OFDM transmit signal receiver according to claim 1, wherein said first S/N ratio generation circuit comprises a detection circuit configured to obtain a squared value (I variance value) of

a difference between said detection output I signal and a reference I signal and a squared value (Q variance value) of a difference between said detection output Q signal and a reference Q signal, and an averaging circuit configured to obtain an average by averaging said I and Q variance values in both a frequency direction and a time direction.

8. The OFDM transmit signal receiver according to claim 3, wherein:

said first S/N ratio generation circuit comprises a detection circuit configured to obtain a squared value (I variance value) of a difference between said detection output I signal and a reference I signal and a squared value (Q variance value) of a difference between said detection output Q signal and a reference Q signal, and an averaging circuit configured to obtain an average by averaging said I and Q variance values in both a frequency direction and a time direction; and

said second S/N ratio generation circuit comprises a detection circuit configured to obtain a squared value (I variance value) of a difference between said equalization output I signal and a reference I signal and a squared value (Q variance value) of a difference between said equalization output Q signal and a reference Q signal, and an averaging circuit configured to obtain an average by averaging said I and Q variance values in both a frequency direction and a time

direction.

9. The OFDM transmit signal receiver according to claim 4, wherein:

5 said first S/N ratio generation circuit comprises a detection circuit configured to obtain a squared value (I variance value) of a difference between said detection output I signal and a reference I signal and a squared value (Q variance value) of a difference between said detection output Q signal and a reference Q signal, and an averaging circuit configured to obtain an average by averaging said I and Q variance values in both a frequency direction and a time direction; and

10 said second S/N ratio generation circuit comprises a detection circuit configured to obtain a squared value (I variance value) of a difference between said equalization output I signal and a reference I signal and a squared value (Q variance value) of a difference between said equalization output Q signal and a reference Q signal, and an averaging circuit configured to obtain an average by averaging said I and Q variance values in both a frequency direction and a time direction.

15 10. The OFDM transmit signal receiver according to claim 3, wherein said selection circuit decides whether said S/N ratio output from said second S/N ratio generation circuit is valid or invalid and, if said S/N ratio is decided to be valid, selects said S/N ratio

output from said second S/N ratio generation circuit
and, if said S/N ratio is decided to be invalid,
selects said S/N ratio output from said first S/N ratio
generation circuit.

5 11. An OFDM transmit signal receiver comprising:

 a demodulation circuit configured to receive an
OFDM transmit signal containing an information carrier
and a pilot signal to convert said information carrier
and said pilot signal into frequency-axial data, said
10 information carrier transmitting information data, and
said pilot signal being used to guess a transmission-
path response;

 a differential detection circuit configured to
conduct detection processing by using a detection-
15 subject symbol of a plurality of symbols indicated at
a predetermined interval in the same frequency range
and using a symbol ahead said detection-subject symbol
by a predetermined time in said pilot signal output
from said demodulation circuit; and

20 a first S/N ratio generation circuit configured to
generate an S/N ratio based on a detection output
provided from said differential detection circuit, said
S/N ratio indicating a reception quality of said OFDM
transmit signal.

25 12. The OFDM transmit signal receiver according to
claim 11, wherein said demodulation circuit comprises
a quadrature detection circuit configured to detect

said OFDM transmit signal in an orthogonal manner and a fast fourier transfer circuit configured to conduct fast fourier transform operations to convert time-axial data of a signal output from said quadrature detection circuit into frequency-axial data.

13. The OFDM transmit signal receiver according to claim 11, further comprising:

an equalization circuit configured to demodulate and to equalize said information carrier output from said demodulation circuit;

a second S/N ratio generation circuit configured to generate an S/N ratio based on an equalization output provided from said equalization circuit, said S/N ratio indicating a reception quality of said OFDM transmit signal; and

a selection circuit configured to select either one of said S/N ratio output from said first S/N ratio generation circuit and said S/N ratio output from said second S/N ratio generation circuit in accordance with said S/N ratio output from said second S/N ratio generation circuit.

14. The OFDM transmit signal receiver according to claim 11, further comprising:

an equalization circuit configured to demodulate and to equalize said information carrier output from said demodulation circuit;

a second S/N ratio generation circuit configured

to generate an S/N ratio based on an equalization output provided from said equalization circuit, said S/N ratio indicating a reception quality of said OFDM transmit signal; and

5 a synthesis circuit configured to synthesize said S/N ratio output from said first S/N ratio generation circuit and said S/N ratio output from said second S/N ratio generation circuit in accordance with said S/N ratio output from said second S/N ratio generation
10 circuit.

15. The OFDM transmit signal receiver according to claim 11, further comprising:

 an equalization circuit configured to demodulate and to equalize said information carrier output from
15 said demodulation circuit;

 a carrier interference detection circuit configured to detect carrier interference/non-interference in said information carrier based on an equalization output provided from said equalization
20 circuit; and

 a correction circuit configured to conduct correction to reflect a carrier deterioration due to said carrier interference on said S/N ratio output from said first S/N ratio generation circuit in accordance
25 with an output provided from said carrier interference detection circuit.

16. The OFDM transmit signal receiver according to

claim 12, further comprising:

an equalization circuit configured to demodulate and to equalize said information carrier and guessing time-axial and frequency-axial transmission-path responses based on a signal output from said demodulation circuit;

a transmission-path response-fluctuation detection circuit configured to detect frequency-directional and time-directional fluctuations of said transmission-path response by using said transmission response guessed by said equalization circuit; and

a correction circuit configured to conduct correction processing, in accordance with such a fluctuation in transmission-path response that is detected by said transmission-path response-fluctuation detection circuit, to reflect a deterioration due to said fluctuation on said S/N ratio output from said first S/N ratio generation circuit.

17. The OFDM transmit signal receiver according to claim 11, wherein said first S/N ratio generation circuit comprises a detection circuit configured to obtain a squared value (I variance value) of a difference between said detection output I signal and a reference I signal and a squared value (Q variance value) of a difference between said detection output Q signal and a reference Q signal, and an averaging circuit configured to obtain an average by averaging

said I and Q variance values in both a frequency direction and a time direction.

18. The OFDM transmit signal receiver according to claim 13, wherein:

5 said first S/N ratio generation circuit comprises a detection circuit configured to obtain a squared value (I variance value) of a difference between said detection output I signal and a reference I signal and a squared value (Q variance value) of a difference
10 between said detection output Q signal and a reference Q signal, and an averaging circuit configured to obtain an average by averaging said I and Q variance values in both a frequency direction and a time direction; and

15 said second S/N ratio generation circuit comprises a detection circuit configured to obtain a squared value (I variance value) of a difference between said equalization output I signal and a reference I signal and a squared value (Q variance value) of a difference
20 between said equalization output Q signal and a reference Q signal, and an averaging circuit configured to obtain an average by averaging said I and Q variance values in both a frequency direction and a time direction.

25 19. The OFDM transmit signal receiver according to claim 14, wherein:

 said first S/N ratio generation circuit comprises a detection circuit configured to obtain a squared

value (I variance value) of a difference between said detection output I signal and a reference I signal and a squared value (Q variance value) of a difference between said detection output Q signal and a reference Q signal, and an averaging circuit configured to obtain an average by averaging said I and Q variance values in both a frequency direction and a time direction; and

said second S/N ratio generation circuit comprises a detection circuit configured to obtain a squared value (I variance value) of a difference between said equalization output I signal and a reference I signal and a squared value (Q variance value) of a difference between said equalization output Q signal and a reference Q signal, and an averaging circuit configured to obtain an average by averaging said I and Q variance values in both a frequency direction and a time direction.

20. The OFDM transmit signal receiver according to claim 13, wherein said selection circuit decides whether said S/N ratio output from said second S/N ratio generation circuit is valid or invalid and, if said S/N ratio is decided to be valid, selects said S/N ratio output from said second S/N ratio generation circuit and, if said S/N ratio is decided to be invalid, selects said S/N ratio output from said first S/N ratio generation circuit.